

7.11 CULTURAL RESOURCES

7.11.1 Affected Environment

Region of Influence

The ROI for this project area is most of KTA because much of it would be affected by the proposed projects, including road construction, demolition and reuse of older buildings, construction of new buildings for the CACTF and vehicle wash, and use of the ranges for military training. The ROI for projects discussed in this section also includes KLOA and Drum Road.

Native Hawaiian History and Tradition

The Kahuku area is on the northernmost point of the Koʻolauloa District. One of the legends most closely associated with the area is the belief that “Kahuku, ʻāina lewa” (the unstable land) was once a separate island. The story takes several forms. One involves the demigod Maui, who is said to have hooked the two land masses together (this time more successfully than his attempt to reel in Kauaʻi). A feature story in a 1922 newspaper referred to “the first Kahuku” as “one of Maui’s land” and reported that relics or images of Maui remained in a secret cave in the hills.

Other versions state that Kahuku floated in from the sea and was inhabited by Menehune (mythical beings said to be of small stature). The Menehune had come to Oʻahu to get freshwater, until one day their island was captured using whalebone hooks strung on olonā fiber. Kahuku and Oʻahu, then two islands, were ruled by siblings who eventually linked hands and pulled the land together. The story of Lāʻiekawai and her twin sister, Lāʻielohelohe, forms another important part of Kahuku’s legendary past. The twins’ mother, Mālaekahana, was married to Kahauokapaka, king of both the Koʻolau districts. Legend has it that his desire for a son was so intense that he had sworn to kill any girl children born to him, and, indeed, he had already killed four daughters before Mālaekahana became pregnant with the twins. To save her babies, Mālaekahana sent her husband off for fish and gave birth in his absence, sending the newborns into hiding. Lāʻiekawai and her sister went to their grandmother, Waka, who kept them safe in a secret cave that could be entered only by diving through a pool called Waiapuka. The old women guardians of legendary princess Lāʻiekawai were also reported to be the ones who hooked the floating island and tied it to Oʻahu.

The Kahuku peninsula, and the Koʻolauloa district in general, are the setting for other legends. One legend describes the *ulua* fish that followed the gods Kāne and Kanaloa upriver to Kaipapaʻu, while another relates the story of the tapa anvil that disappeared from Kahuku and traveled along an underground waterway to resurface in Waipahu.

KTA and KLOA lie in the uplands of the eastern portion of Waialua District and the western portion of Koʻolauloa District. Numerous ahupuaʻa run inland from the North Shore coastline into the upland areas of KTA and KLOA, each generally associated with one major stream drainage. Within these stream drainages, scattered among the remains of irrigated taro terraces, sweet potato cultivation features, and other agricultural features are several stone platforms that may have been used for rituals.

While the general Kahuku area plays an important role in Hawaiian legends, most places specifically mentioned are off-shore islands and coastal areas. Research to date has not identified places close to SBCT project areas that are associated with traditional legends. Anderson researched all the Land Commission Awards (LCAs) and grants awarded in the four ahupua'a that extend into KTA (Anderson 1998). Most of these lands are along the coastal plain and none appear to lie within KTA. Three LCAs are within KLOA, and three others are recorded on the KLOA boundary (Dega and McGerty 1998, 16). The LCAs generally consist of watercourses for irrigation and land to cultivate orange trees, sweet potatoes, and kalo and to trap fish (Dega and McGerty 1998, 16). Sites of importance to the Hawaiian community (ATIs) have been identified at KTA, of which three are heiau. Two heiau, Pahipahi'ālua Heiau and Hanakaoe Platform, consist primarily of rock platforms with a few associated features. Hanakaoe Platform is listed on the NRHP. The third, Pū'ula Heiau, was documented by McAllister (1933) but listed as destroyed. A recent survey has identified a cluster of features (Site 4930) near where the Pū'ula Heiau was reported to have stood that may be remnants of the original site (Williams and Patolo 1998). The presence of the sacred Waikane Stone, associated with Native Hawaiian legends, was also documented by McAllister (1933) although it has not been identified in any archaeological surveys. It is possible that the stone was destroyed or relocated or that it is outside the boundaries of KTA. A terrace that may have been used for religious ceremonies was identified as part of a house complex found by Davis (1981), but it may have been destroyed by the construction of a windfarm turbine. There are known burials at KTA as well (Drolet 2000).

Within KLOA, only two formal surveys have been conducted directly within the training area (Dega and McGerty 1998). Identified sites represent wetland and dryland agriculture, temporary and permanent habitation, two burial loci, trails, and possible ceremonial structures (Dega and McGerty 1998). One habitation site and one set of agricultural features in KLOA have structures associated with them that may have been used in rituals. The Ko'olau Summit Trail that follows the Ko'olau Ridge and the Kawailoa Trail that connects the Summit Trail with the lower valleys near Pūpūkea may be historic (Dega and McGerty 1998).

Ongoing Army consultation efforts with Native Hawaiians, Army cultural resources staff field checks, and archival research have not resulted in any additional ATIs or sacred sites on these installations.

Historic Overview

KTA was occupied at least seasonally from the 14th century on and was used for agriculture from the 15th century on. Evidence of occupation prior to European contact includes rock shelters, burial sites, irrigation complexes, and habitation sites (Tomonari-Tuggle 2002).

The earliest settlements were established along the coastal plain, with a heavy concentration around Waialua Bay, and these areas were to remain the most populous throughout prehistory. Regular use of the upper stream valleys seems to have begun only in the 14th century and to have involved low intensity exploitation of forest products and native birds, with temporary use of rock shelters.

Late in the 17th century a shift occurred to more intensive uses of the upper valley, with permanent habitations established, long-term use of rock shelters, raising of pigs and dogs, and probably cultivation of upland crops. At this same time irrigated taro fields were constructed in the alluvial flats along some of the upland streams, such as Kawai Iki, and Kawai Nui (Dega and Kirch 2002). The archaeological evidence from KLOA suggests that this area was abandoned after the time of contact with the West, perhaps as a result of population decrease following the introduction of new diseases.

Outside of KLOA, in the Anahulu Valley downstream of KLOA, the area was repopulated early in the 19th century. Irrigated terrace fields were developed and expanded under pressure first from Kamehameha I to grow food to support his military expeditions and later from the high chiefs to produce surplus food to support their schemes to increase their prestige. However, there is no evidence of the use of the fields in KLOA during this period. By the time of the Great Mahele (discussed in Section 3.11), with the population continuing to decline, the upland areas were largely abandoned, and almost all of the kuleana claims (claims by native tenants as opposed to rulers) were for lands along the coastal plain (Kirch and Sahlins 1992).

Kahuku appears to have been a lush and prosperous region in the precontact era, but a series of observations made by foreigners illustrates rapid changes on the peninsula after European contact. An officer on Cook's last voyage described O'ahu's northern coast this way: "Nothing can exceed the verdure of the hills, the variety of wood and lawn, and the rich cultivated valleys which the whole face of the country displayed." Captain Charles Clerke, on HMS Resolution in 1779, called Kahuku "exceeding fine and fertile" and observed a large village with, he thought, a temple. But by 1797, Captain George Vancouver remarked that "the country did not appear in so flourishing a state, nor to be so numerously inhabited." By the mid-1830s a visitor observed that "much taro land now lies waste because the diminished population ... does not require [it]." A century later, archaeologist Gilbert McAllister called the area "rather desolate" and found it hard to imagine a thriving agricultural community there.

John Papa 'Ōi described a delightful visit around 1810 to the ahupua'a of Waiale'e, on the western side of Kahuku. "There was a pond there," 'Ōi recalled, "surrounded by taro patches, and there were good fishing places inside the reef Chiefs and commoners crowded together at Pūehuehu to go diving, or board surfing at 'Ulakua.'"('Ōi 1983, 24, 63). A generation later, however, the missionary John Emerson, who had watched with indignation as livestock from upland ranchers wreaked havoc on coastal communities in his home district of Waialua, described an even grimmer process taking place in Kahuku where the owner of one huge ranch took over the district.

Ranching in Ko'olauloa began in the 1850s with the formation of Kahuku and Mālaekahana Ranches, with ranchers raising both cattle and sheep. Eventually Herman Widemann bought both ranches and combined them, and in 1876 James Campbell purchased the combined ranch, which gave him ownership of 15 ahupua'a, including all the lands within KTA. His purchase included 3,000 head of cattle, 90 horses, and 1,700 sheep.

In 1890 Campbell, along with James Castle and Benjamin Dillingham formed the Kahuku Plantation Company. Sugarcane began to replace pasture in Kahuku, a sugar mill was established at Kahuku, and Dillingham's OR&L Railroad reached the mill in 1899, allowing easy transport of the milled sugar to Honolulu. Sugarcane was supplemented by small-scale pineapple cultivation by individual growers, who leased small parcels of land from Kahuku Plantation beginning in 1916. The leases were later acquired by the California Packing Company. Many of these former pineapple fields, along with former plantation camp sites, are found on KTA lands (Drolet 2000).

KTA was operated as a sugar plantation until the 1930s, when it was used to establish an airfield and to host a radar installation on the coast outside of KTA. After the war, additional lands were purchased to support the establishment of the training area proper, and in 1959 a Nike Hercules missile battery was constructed.

KLOA was not used as much as KTA in historic times, primarily due to its steep and heavily vegetated topography. KLOA military history is linked to the history of SBMR, and in 1930, KLOA was established as a military training area. During the 1930s and 1940s, a railroad site was constructed, as were gun mounts for 240mm guns, cement towers and numerous fox holes, helicopter pads, razor wire fences, and other training aids were constructed for use in jungle warfare training.

Previous Consultations and Reports

Traditional Cultural Properties Surveys

Anderson (1998) collected and reviewed archival information concerning traditional cultural places in and around KTA. USARHAW has begun a TCP and ATI survey of KTA and KLOA, as they are defined in Section 3.11.2, but it is not yet available for review.

Archaeological Surveys

Kahuku Training Area

Archaeological investigations at KTA include those of Anderson and Williams (1996, 1998), Davis (1981), Drolet (2000), McAllister (1933), Rosendahl (1977), and Williams and Patolo (1998). Drolet states that, with the completion of his survey, 33 percent of KTA has been surveyed for archaeological sites.

McAllister (1933) reported two sites, although one had been destroyed and the other could not be located. Rosendahl (1977) conducted a reconnaissance of about 10 percent of KTA, including some aerial survey, and compiled information from earlier sources. He identified nine sites: three were listed as having been destroyed, one previously identified site could not be located, and five new sites were found during the survey. Davis (1981) added three sites and one historic plantation period site, and more recent survey work has revealed additional sites in the area.

Williams and Patolo surveyed 10 areas totaling 341 acres (138 hectares), roughly eight percent of KTA. They employed a fairly intensive survey strategy systematically traversing

survey areas that included a range of topographic variables: sections of the cliff and bluff edge north (seaward) of the KTA, portions of large interior valleys, small gulches, and steep, rugged interior areas and found 14 new archaeological sites (Williams and Patolo 1998).

Drolet (2000) intensively surveyed the northwestern area (Area A1) at the mouth and lower portions of Kaunala and Pahipahi‘ālua gulches and found an additional 13 sites, including pre- and post-European Contact Hawaiian sites and military sites.

Farrell and Cleghorn surveyed KTA for historic buildings in 1995 (Farrell and Cleghorn 1995) and conducted investigations at the Punamano Communication Station recording the presence of one site consisting of primarily post-World War II structures, features, and artifacts from the Communication Station. In August 2002, field work and historical research was undertaken for the former Nike missile site at KTA (IARII 2003).

Drum Road

Pacific Legacy has undertaken a survey of the proposed alignment for the construction and upgrade of Drum Road (Pacific Legacy 2002). It identified 23 sites within 15 meters of Drum Road, between KTA and HMR.

Kawailoa Training Area

At KLOA, the Bishop Museum conducted a reconnaissance survey of a few of the valleys of the tributary streams that flow into the Anahulu River and identified five sites (Rosendahl 1977). During the intensive investigations of the Anahulu River valley, the Bishop Museum identified seven sites within the boundaries of KLOA, as well as 33 additional sites in the Anahulu Valley, downstream from KLOA, with several near the KLOA boundary (Kirch and Sahlins 1992). Dega and McGerty conducted field work at KLOA, focusing on stream valleys and gulches, including several of the gulches traversed by the proposed road construction. They recorded 48 sites, 44 of them within the boundaries of KLOA (Dega and McGerty 1998, 2002).

Known Prehistoric and Historic Resources

Kahuku Training Area

Table 7-23 provides an overview of prehistoric and historic resources identified with the ROI and their NRHP status if known. Thirty-seven archaeological sites have been identified at KTA, including prehistoric, historic, and military era sites. These include a heiau listed on the NRHP and a hearth, dwelling, and agricultural sites. Historic sites include a house, irrigation features, and bunkers. The ‘Ōpana Mobile Radar Station is a National Historic Landmark listed in the NRHP. Only the heiau and the radar station have been evaluated for eligibility. Table 7-24 lists currently identified archaeological sites at KTA.

Table 7-23
Summary of Known Cultural Resources at KTA

	Total Archaeological Sites	Sites Listed, Eligible for Listing, or Needing DE	Area Surveyed for Archaeological Sites	Cold War Era Buildings	Buildings Listed, Eligible for Listing, or Needing DE
KTA	37	36 (34 DE)	33%	22	22
Drum Road	23	23	27 miles ¹ (43.5 kilometers)	0	0

Sources: IARII 2003; Pacific Legacy 2002

¹Fifteen meters on each side of 27 miles (43.5 kilometers) of road

DE – Determination of Eligibility.

Cold War-era buildings or structures at KTA are listed in Table 7-25. These sites are composed of the former Nike missile security facility and launch sites. The missile site at KTA was one of four Nike missile sites in Hawai'i and was active from January 1961 to March 1970. The buildings and structures are intact and are generally unaltered. The launcher area, administration area, and the control area all retain not only the original structures, but also many of the site features, such as security fencing, sidewalks, exterior stairs with metal railings, streets and curbing, flagpoles, bicycle wash/storage area, and electrical and plumbing equipment. The setting appears to be unaltered, other than the change in landscaping due to the abandonment of the site. Preserving this site was a stipulation of the Section 106 consultation on the demolition of the Nike site at DMR.

The Nike site is significant as an intact example of a Cold War Nike missile site and reflects an important development in the history of American civil air defense and as part of the Hawai'i Nike missile program. The site is eligible for the National Register under criterion A, having been associated with events that have made a significant contribution to the broad patterns of our history, and under criterion C, as it is a relatively unaltered and intact example of Nike missile site construction (IARII 2002a).

Kawailoa Training Area

Archaeological surveys have been conducted of selected areas within KLOA, primarily in the gulches in the west portion of the project area, and 56 archaeological sites have been identified. All sites have been recommended as eligible for listing on the NRHP, and several also might be considered ATIs. Table 7-26 lists the currently identified sites within KLOA that are recommended as eligible for the NRHP.

Drum Road

Pacific Legacy has surveyed the proposed alignment for the construction and upgrade of Drum Road and found 23 archaeological sites within or near the area of impact of the Drum Road upgrade in KTA (Pacific Legacy 2002).

Drum Road starts from the northwest area of HMR. Fankhauser recorded three historic sites in Helemanō Gulch just north of HMR (Fankhauser 1987).

Table 7-24
Sites at KTA Recommended as Eligible

Site Number	Site Type	Site Description
50-80-02-0259	Spring	Waikane Stone
50-80-02-0260	Heiau	Pu‘uala Heiau (4,930 terrace facing)
50-80-02-0599	Bunkers	Three bunkers at Punamanō Communication Station
50-80-02-1043	Complex	Kawela agricultural terraces
50-80-02-2357	Wall	Plantation era stone wall remnant
50-80-02-2358	Single feature	House site 13m x 10m
50-80-02-2359	Two adjacent terraces	Terraces 22.5m x 6m
50-80-02-2360	Single feature	Terrace 20m x 10m
50-80-02-2501	Heiau	Hanakaoe platform 4m x 7m
50-80-02-4882	Bunker	Military bunker 8.7m x 4.5m
50-80-02-4883	Historic house site	Plantation era house site
50-80-02-4884	Imu	Imu site 3m
50-80-02-4885	Heiau	Pahipahi‘āluaHeiau 17m x 12m
50-80-02-4886	Bunker	Pentagonal military bunker 3.5m x 3m
50-80-02-4887	Terrace complex	Habitation complex with related agricultural features 24m x 14m
50-80-02-4888	Wall/depressions	Agricultural earthen depressions/rock alignment 20m?
50-80-02-4930	Linear mound	Linear rock mound (remnants Site 260?) 7m x 2m
50-80-02-5534	Rock shelter	Temporary shelter 5m x 2.5m
50-80-02-5536	Rock shelter	Temporary shelter? 15m x 3m
50-80-02-5537	Enclosure	Enclosure (pre-Contact) 62m x 40m
50-80-02-5538	Wall	Wall (pre-Contact) 15m x 1m

Table 7-24
Sites at KTA Recommended as Eligible *(continued)*

Site Number	Site Type	Site Description
50-80-02-5539	Terraces	Retaining wall and stone concentration 40m x 20m
50-80-02-5540	Terraces	Terraces 15m x 15m
50-80-02-5684	Enclosure	Enclosure 50m x 25m
50-80-02-5685	Rock shelter	Temporary shelter 9m x 5m
50-80-02-5686	Ahupua'a boundary	Wall 4m x 1m
50-80-02-5688	Roadway	Historic roadway 30m x 6m
50-80-02-5689	Bunker	Underground bunker 3m x 2m
50-80-02-5690	Enclosure	Bunker 4m x 3m
50-80-02-9506	Historic irrigation	Kea'aulu Ditch (hist. stone faced irr. ditch)
50-80-02-9507	Historic (?) terrace	'O'io Stream terrace (ag. terrace)
50-80-02-9508	Platform	East 'O'io Gulch platform (stepped stone platform)
50-80-02-9509	Complex	'O'io Gulch complex (agricultural terraces)
50-80-02-9517	Terraces	Kāneali'i agricultural terraces (possible remnants)
50-80-02-9745	Landmark	'Opana Mobile Radar Site

Source: IARII 2003

Table 7-25
Historic Military Buildings at KTA

Facility No.	Description (original use)	Year Built	Historical Period
0001	Administrative building	1961	Cold War
0003	Flagpole (gone)	1961	Cold War
0004	Pump house (water supply/treatment building)	1961	Cold War
0005	Barracks and mess hall	1961	Cold War
0008	Water storage tank	1961	Cold War
0009	Water supply/treatment building; pump house	1961	Cold War
0013	Control station; air/fallout shelter	1961	Cold War
0014	Control station; air/fallout shelter	1961	Cold War
0018	Control station; air/fallout shelter	1961	Cold War
00020	Sentry box	1961	Cold War
0022	Protective barrier	1961	Cold War
0023	Protective barrier	1961	Cold War
0026	Protective barrier	1961	Cold War
0027	Protective barrier	1961	Cold War
0028	Sentry control station	1961	Cold War

Table 7-25
Historic Military Buildings at KTA *(continued)*

Facility No.	Description (original use)	Year Built	Historical Period
0030	Protective barrier	1961	Cold War
0036	Protective barrier	1961	Cold War
0037	Warhead building	1961	Cold War
0045	Missile assembly and test building	1961	Cold War
0047	Generator building	1961	Cold War
0048	Transformer building	1955	Cold War
0060	Sentry box	1961	Cold War
0061	ACQ tower (gone)		Cold War
0063	Administration building	1961	Cold War
0064	Flagpole	1961	Cold War
0067	Barracks and mess hall	1961	Cold War
0070	Generator building	1961, 1963	Cold War
0071	Transformer pad	1963	Cold War
0075	MTR & TTR pad	1963	Cold War
0078	MTR & TTR pad	1963	Cold War
0079	MTR & TTR pad	1963	Cold War
0080	Interconnecting corridor	1961	Cold War
0081	Pad for control vans	1961	Cold War
0082	Pad for control vans	1961	Cold War
0083	Pad for control vans	1961	Cold War
0087	HIPAR tower (gone)	1961	Cold War
0089	Water tank	1961	Cold War
0090	Bore site mast (gone)	1961	Cold War
T-150	Guard tower	c. 1961	Cold War
T-151	Guard tower	c. 1961	Cold War

Source: IARII 2003

Table 7-26
Sites at KLOA Recommended as Eligible

State Site No.	Site Type	Description
50-80-04-5634	Wall complex	Three retaining walls/ one align
50-80-04-5635	Single lava tube	Lava tube
50-80-04-5637	Single trail	Kawailoa Trail
50-80-04-5638	Single trail	Ko'olau Summit Trail
50-80-05-5605	Path, terraces	Historic path, dryland agriculture
50-80-05-5606	Multiuse complex	Agriculture/habitation/ceremonial complex
50-80-05-5607	Terrace complex	Four alignments/auwai
50-80-05-5608	Two align	alignments
50-80-05-5609	Terrace/lo'i fields	Alignments/earth berms/lo'i fields
50-80-05-5610	Terrace/lo'i fields	Three alignments/lo'i fields
50-80-05-5611	Terrace complex	"Island" ag site in Kawainui Stream
50-80-05-5612	Terrace complex	
50-80-05-5613	Terrace/platform complex	Two temporary habitations, platforms/align/planting areas
50-80-05-5614	Terrace complex	Align/platform
50-80-05-5615	Terrace complex	
50-80-05-5616	Terrace complex	

Table 7-26
Sites at KLOA Recommended as Eligible *(continued)*

State Site No.	Site Type	Description
50-80-05-5617	Terrace system	Good species indicators
50-80-05-5618	Wall	15m wall
50-80-05-5619	Terrace system	Wall and three terraces
50-80-05-5620	Terrace complex	four terraces/planting areas
50-80-05-5621	Terrace complex	Three terraces/one long mound
50-80-05-5622	Terrace complex	Large lo'i system
50-80-05-5623	Terrace complex	Large lo'i system
50-80-05-5624	Single imu	imu
50-80-05-5625	Terrace complex	Terrace walls/mounds/'auwai
50-80-05-5626	Terrace complex	
50-80-05-5627	Terrace complex	
50-80-05-5628	Terrace complex	
50-80-05-5629	single platform	Possible burial
50-80-05-5630	Terrace complex	Nine+ walls/two enclosures/several clearing mounds
50-80-05-5631	Single rock shelter	Rock shelter: possible burial
50-80-05-5632	Terrace complex	Small alignments
50-80-05-5633	Terrace complex	Small terrace walls
50-80-05-5636	Single fire pit	Large charcoal stain
50-80-05-9510	Platform	Kawainui Platform
50-80-05-9511	Terraces	Kawaiiki Agricultural Complex
50-80-05-9512	Complex	Kawailoa Complex
50-80-05-9513	Enclosure	Kawainui Enclosure
50-80-05-9514	Platforms	Kawaiiki Platform
50-80-04-5717	Alignment, planting areas	Dryland agriculture
50-80-04-5718	Terrace remnant	Irrigated agriculture
50-80-04-5719	Pumping station	Sugarcane industry
50-80-04-5720	Terrace remnants, ahu	Dryland agriculture, marker
50-80-04-5721	Walls, trail	Dryland agriculture, animal pen, transportation
50-80-04-5722	Concrete slab, terrace	Gauging station
50-80-04-5723	Road facing, road	Transportation
50-80-04-5724	Alignment	Dryland agriculture
50-80-04-5725	Stacked wall, modified slope	Pool; unknown
50-80-04-5730	Alignment	Retaining wall
D6-32	Terraces	
D6-33	Terrace	
D6-34	Complex	Kainiki's house (LCA)
D6-40	House site	Mailou's house (LCA)
D6-41	Irrigation complex	pondfield system
D6-42	Small pondfield system	'Ili Koilau System
D6-43	Irrigation pondfield system	'Ili Pulepule System

Source: IARII 2003

Potential for Unknown Resources

Kahuku Training Area

The site probability model presented by Williams and Patolo (1998, 77-81; see also Williams and Patolo 1998, 79, Figure 23) offers a low probability for archaeological sites in low elevation areas because they have been subjected to extensive land-altering disturbances from sugarcane and pineapple farming and military use. Areas in the rugged interior of KTA, above the 800-foot (244-meter) elevation, which have seen no modern land use alterations and which Native Hawaiians could have used for resource exploitation (e.g., farming), have no surface visibility. Areas of medium site location probability include narrow gulches and the lower elevations between 600 and 800 feet (183 and 244 meters). These areas have had less modern land use alterations and are closer to the populated coastal flatland bordering KTA. Areas of high site location probability include bluff slopes and edges and the mouths of narrow gullies because these areas have suffered less modern land disturbances and they border the coastal flatlands. Through archival research, Williams and Patolo (1998, 81) discovered that bordering coastal flatlands were the primary settlement areas in the past.

The proposed sites for constructing the CACTF at KTA lie in areas designated as sensitive for archaeological resources (IARII 2003; Davis 1981). Figures 7-24 and 7-25 show areas of archaeological sensitivity at KTA and KLOA.

Kawailoa Training Area

Some of KLOA has not been surveyed for cultural resources due to the difficulty of access. The very rugged steeply sloped terrain has a low site location probability. Unsurveyed areas with similar topography as those areas known to contain archaeological sites, however, have a high probability of unrecorded sites. Because the type of use or use areas are not going to change, there is a low probability for unrecorded cultural resources to be disturbed.

Drum Road

There is a high probability that archaeological sites will be discovered during road construction of the segment traversing KLOA.

7.11.2 Environmental Consequences

Summary of Impacts

Cultural resources impacts related to the Proposed Action at KTA vary, depending on the location and the nature of the project. The two significant impacts mitigable to less than significant involve impacts on historic buildings from construction and demolition and impacts on archaeological resources from range and facility construction (Table 7-27). As explained in the mitigation sections below, these impacts could be mitigated by compliance with the PA the Army is developing in consultation with the Hawai'i SHPO and other parties. The draft PA provided in Appendix J (dated May 16, 2003) was current when this document was printed. Because consultation on the PA is ongoing, this draft PA may have been revised since that time. Three less than significant impacts were identified and they are

Figure 7-24
Archaeological Sensitivity Zones, Kahuku Training Area

Figure 7-25
Archaeological Sensitivity Zones, Kawaihoa Training Area

the risk to archaeological resources from training activities, the risk to unidentified ATIs, and impacts on archaeological resources from road use. These impacts would be mitigated by site surveys, compliance with IDPs, and monitoring by installation personnel.

Table 7-27
Summary of Potential Cultural Resources Impacts at KTA/KLOA

Impact Issues	Proposed Action	Reduced Land	
		Acquisition	No Action
Impacts on historic buildings	⊗	⊗	○
Impacts on archaeological resources from range and facility construction	⊗	⊗	○
Impacts on archaeological resources from training activities	⊕	⊕	⊕
Impacts from FTI tower construction	○	○	○
Impacts to ATIs	⊕	⊕	○
Impacts to undiscovered archaeological sites in areas of low potential	N/A	N/A	N/A
Impacts from installation information infrastructure architecture construction	N/A	N/A	N/A
Impacts to archaeological sites from road construction	N/A	N/A	N/A
Impacts to archaeological sites from road use	⊕	⊕	⊕

In cases when there would be both beneficial and adverse impacts, both are shown on this table. Mitigation measures would only apply to adverse impacts.

LEGEND:

⊗ = Significant	+	= Beneficial impact
⊗ = Significant but mitigable to less than significant	N/A	= Not applicable
⊕ = Less than significant		
○ = No impact		

Proposed Action (Preferred Alternative)

Significant Impacts Mitigable to Less than Significant

Impact 1: Impacts on historic buildings. Constructing the CACTF could have significant impacts on historic buildings at KTA. This project would involve renovating ten buildings in three sites and demolishing buildings S150 and S151. Among the properties to be renovated are the recommended eligible Nike Missile Site and other buildings that might be eligible for the NRHP as Cold War-era properties.

Regulatory and Administrative Mitigation 1. The Army has committed to preserving the Nike Missile Site complex and will conduct renovations, in compliance with the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings. The Army would determine the age and eligibility of other buildings to be demolished or renovated prior to implementing any plans to demolish or renovate them. Preserving the Nike missile site was a stipulation of the Section 106 consultation on the demolition of the

Nike site at DMR. In accordance with the PA, a draft of which is provided in Appendix J, any buildings to be renovated or demolished in the future would be evaluated for eligibility for the NRHP. If they were eligible, the Army would document the buildings in accordance with the standards of the HABS/HAER through standards and actions arrived at in consultation with the SHPO, Historic Hawai'i Foundation and other interested parties. Consultation is now ongoing with the SHPO and other parties concerning the PA which, when signed, will provide a method for USARHAW to comply with the NHPA.

Additional Mitigation. No additional mitigation has been identified.

Impact 2: Impacts on archaeological resources from range or facility construction. The tactical vehicle wash and the CACTF either overlay or are adjacent to identified archaeological resources.

All of the CACTF area will be surveyed prior to construction. Site 50-80-02-4884, approximately 984 feet (300 meters) northwest of Site 1, was fully excavated in the 1990s and was identified as a cooking feature used during tree cutting activities. The potential for undiscovered archaeological resources in the proposed project area is low. An archaeological survey of the CACTF area is being conducted.

The tactical vehicle wash has been surveyed, and the project area contains no identified cultural resources. However a stepped stone platform (site 50-80-02-9508) is in the gulch immediately northeast of the project area, and a heiau (site 50-80-02-2501) is only a short distance to the northwest.

Facility construction involves grubbing vegetation, grading site surfaces, excavating the subsurface, and moving heavy construction equipment. All of these activities could result in direct destruction of or damage to archaeological resources or indirect damage by contributing to soil erosion. Sites 9508 and 2501 could be indirectly affected by runoff and erosion during construction of the tactical vehicle wash. USARHAW is considering the mitigations described below, which would reduce impacts to less than significant.

Regulatory and Administrative Mitigation 2. Before construction, the Army would conduct pedestrian surveys of the areas that may be affected. Archaeological sites identified through survey and previously located sites would be flagged and avoided or protected. If previously identified archaeological sites or newly discovered sites could not be avoided, USARHAW would mitigate the sites through data recovery or other mitigation measures determined through consultation, in accordance with the PA. To address the accidental discovery of archaeological sites, human remains, or cultural items, an IDP would be developed that includes provisions in accordance with the PA.

Less than Significant Impacts

Impacts on archaeological resources from training activities. There are not likely to be significant increased impacts on archaeological resources on the KTA training areas from off-road Stryker maneuvers and other military training activities. Known archaeological sites have a buffer area delineated as a no use area. Possible impacts would include accidental discoveries of unknown archaeological resources and damage to them as a result of training activities on

the range. Additionally, as discussed under geological resources, Strykers exert a greater amount of force on the ground than do vehicles previously used on training areas. Off road mounted maneuvers with Strykers could result in greater indirect impacts through contribution to erosion.

These impacts would be mitigated by regular monitoring by cultural resources personnel and compliance with an IDP developed in compliance with the PA, as described above. If sites were discovered as a result of erosion or training exercises, the IDP would provide for compliance with the provisions of NAGPRA and ARPA in case of accidental discovery of human remains, cultural items, or archaeological materials. Any unsurveyed training areas would be surveyed and sites would be evaluated for eligibility to the NHRP and flagged for avoidance.

Impacts on Areas of Traditional Importance. The ATIs that have been identified at KTA are outside the boundaries of the project areas for the construction and use of the CACTF and tactical vehicle wash. However, further oral historical and archival research might result in the identification of ATIs that could be affected by these projects. Any identified ATIs would be avoided where feasible. Construction or training area uses would be designed to avoid identified traditional places and to minimize visual impacts on traditional cultural landscapes by site location, design, and orientation, where feasible.

If identified ATIs could not be avoided because of interference with the military mission or risk to public safety, USARHAW would have to reopen consultation to identify impacts and to develop appropriate mitigation measures. Such mitigation would be developed in consultation with the SHPO and the Native Hawaiian community, in accordance with the provisions of the PA.

The Army has identified Native Hawaiian burial sites in the SBCT ROI. The Army completed notification and consultation for these burial sites in accordance with NAGPRA and, for the most part, left these human remains in place. To address any impacts are discovered on any burial sites, or if there is an inadvertent discovery of Native Hawaiian human remains or funerary objects, the Army will abide by all notification and consultation requirements, as outlined in Section 3 of NAGPRA.

Impacts from road use. Archaeological sites have been identified within the area of impact of the Drum Road upgrade in KTA (Pacific Legacy 2002). Construction impacts on Drum Road sites would be covered by the EA addressing that construction project. Impacts to sites along Drum Road and Helemanō Trail from use of these roads under the Proposed Action could include erosion and possible vandalism or human access. These impacts are likely to be less than significant and would be mitigated by regular monitoring by installation cultural resources personnel.

No Impacts

Impacts from FTI tower construction. The FTI project at KTA would involve constructing four antennas, which would require a 20-foot (6.1-meter) by 25-foot (7.6 -meter) concrete pad supporting an equipment tower and shed. The towers would be erected on disturbed sites in

the middle of the KTA training area, which is identified as having moderate sensitivity for archaeological resources. Construction would not require any additional ground disturbance and is therefore unlikely to have any impact on archaeological resources.

Reduced Land Acquisition Alternative

The RLA Alternative would produce the same impacts as those under the Proposed Action.

No Action Alternative

Less than Significant Impacts

Legacy Force training activities would continue at current levels under No Action. This would result in ongoing impacts on cultural resources from training activities, particularly ground troop activities, off-road vehicle movement, and subsurface excavations. Certain archaeological resources on the training areas are monitored following exercises to document adverse effects on the sites. Under No Action, Legacy Force training would continue, and there would be no additional impacts on cultural resources or changes in cultural resources management policies. USARHAW would continue efforts to inventory eligible historic properties, in compliance with Section 110 of the NHPA, and Legacy Force-related project planning would comply with Section 106 and its implementing regulations. Impacts to cultural resources would be mitigated, in compliance with these regulatory requirements.